

Claims:

1. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a light absorbing compound that absorbs at least a portion of the activating light during use;

a co-initiator that activates curing of the monomer to form the eyeglass lens during use; and

a photoinitiator that activates the co-initiator in response to being exposed to the activating light during use; and

directing activating light toward at least one of the mold members to cure the lens forming composition to form the eyeglass lens.

2. The method of claim 1 wherein curing the lens forming composition comprises polymerizing the monomer.

3. The method of claim 1 wherein directing activating light to the lens forming composition comprises applying a plurality of activating light pulses to the lens forming composition.

4. The method of claim 1 wherein directing activating light to the lens forming composition comprises applying a plurality of activating light pulses to the lens forming composition.

5. The method of claim 1, further comprising applying air to the mold cavity to remove heat
5 from the mold cavity.

6. The method of claim 1, further comprising directing air toward at least one of the mold members to cool the lens forming composition.

10 7. The method of claim 1, further comprising applying a hydrophobic coating to the eyeglass lens.

8. The method of claim 1, further comprising applying a hydrophobic coating to the eyeglass lens, wherein the hydrophobic coating is adapted to inhibit the eyeglass lens from being exposed
15 to water and to ambient oxygen.

9. The method of claim 1, further comprising inhibiting the eyeglass lens from being exposed to water and to ambient oxygen by applying a coating to the eyeglass lens.

20 10. The method of claim 1, further comprising cooling the first mold member and the second mold member to below ambient temperature prior to directing activating light toward at least one of the mold members.

11. The method of claim 1 wherein the first mold member comprises a casting face and a non-
25 casting face, and further comprising placing a first hardcoat layer upon said casting face and a second hardcoat layer upon said first hardcoat layer prior to placing the liquid lens forming composition in the mold cavity.

12. The method of claim 1 wherein the second mold member comprises a casting face and a non-casting face, and further comprising placing a material capable of being tinted upon the casting face prior to placing the liquid lens forming composition in the mold cavity.

5 13. The method of claim 1 wherein the second mold member comprises a casting face and a non-casting face, and further comprising placing a material capable of being tinted upon the casting face prior to placing the liquid lens forming composition in the mold cavity, and further comprising applying dye to the material to tint the lens forming composition.

10 14. The method of claim 1, further comprising applying an adhesion-promoter coating to an inner surface of the first mold member and an inner surface of the second mold member to substantially adhere the lens forming composition to the first and second mold members during use.

15 15. The method of claim 1, further comprising placing a substantially hazy light filter substantially adjacent to at least one of the mold members to vary intensity of activating light across the lens forming composition when the light is directed toward at least one of the mold members.

20 16. The method of claim 1 wherein the first mold member comprises a casting face and a non-casting face, wherein the second mold member comprises a casting face and a non-casting face, and further comprising directing cooled air having a temperature below ambient temperature toward at least one of the non-casting faces of the first and second mold members to remove heat from the lens forming composition.

25 17. The method of claim 1 wherein the activating light is removed from the mold members when substantially all of the lens forming composition has reached its gel point.

18. The method of claim 1 wherein the activating light comprises a first intensity, and wherein the activating light is directed toward at least one of the mold members until substantially all of the lens forming composition has reached its gel point, and further comprising directing activating light having a second intensity towards at least one mold member to cure substantially all of the lens forming composition, the first intensity being greater than the second intensity.

19. The method of claim 1 wherein the activating light is directed toward at least one of the mold members until substantially all of the lens forming composition has reached its gel point, and further comprising inhibiting the activating light from further being directed toward the mold members, thereby allowing substantially all of the lens forming composition to cure.

20. The method of claim 1 wherein the eyeglass lens is formed from the lens forming composition in a time period of less than about 10 minutes.

21. The method of claim 1 wherein the eyeglass lens is formed from the lens forming composition in a time period of less than about 30 minutes.

22. The method of claim 1 wherein the first mold member is spaced apart from the second mold member by a gasket, and further comprising removing the gasket subsequent to directing activating light to at least one of the mold members to expose the lens forming composition to ambient air for approximately 5 to 30 minutes, thereby cooling the lens forming composition.

23. The method of claim 1 wherein the first mold member is spaced apart from the second mold member by a gasket, and further comprising removing the gasket subsequent to directing activating light to at least one of the mold members to expose the lens forming composition to ambient air for approximately 5 to 30 minutes, thereby cooling the lens forming composition, and further comprising directing additional activating light toward at least one of the mold members to at least partially cure the lens forming composition.

24. The method of claim 1, further comprising heating the cured lens forming composition to a temperature between approximately 100°C to 120°C for approximately 3 to 15 minutes subsequent to curing the lens forming composition.

25. The method of claim 1, further comprising placing a filter substantially adjacent to at least one of the mold members, wherein the filter comprises a varying thickness such that the filter varies an intensity distribution of activating light across the mold members.

26. The method of claim 1, further comprising a filter with a pattern printed on it to vary to optical density.

27. The method of claim 1 wherein directing activating light toward at least one of the mold members initiates the photoinitiator proximate a surface of the lens forming composition such that the photoinitiator initiates the co-initiator proximate a middle of the lens forming composition, the middle of the lens forming composition having insufficient light to initiate the photoinitiator therein.

28. The method of claim 1 wherein the light absorbing compound is dissolved in the monomer.

29. The method of claim 1 wherein the lens forming composition comprises a hydroquinone compound for inhibiting polymerization of the monomer before polymerization is desired.

30. The method of claim 1 wherein the lens forming composition comprises between about 0 and 70 ppm of monomethylether hydroquinone.

31. The method of claim 1 wherein the light absorbing compound comprises a photochromic compound.

32. The method of claim 1 wherein the light absorbing compound comprises a photochromic compound, and wherein the photochromic compound comprises a compound selected from the group consisting of spirooxazines, spiropyrans, spironaphthoxazines, spiropyridobenzoxazines, spirobenzoxazines, naphthopyrans benzopyrans, spironaphthopyrans, indolinospironaphthoxazines, indolinospironaphthopyrans, diarylnaphthopyrans, organometallics, and phenylmercury.

33. The method of claim 1 wherein the light absorbing compound comprises a compound selected from the group consisting of 2-(2H-benzotriazole-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol, 2-hydroxy-4-methoxybenzophenone, mixtures of 2-[4-((2-hydroxy-3-dodecyloxypropyl)oxy)-2-hydroxyphenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine and 2-[4-((2-hydroxy-3-tridecyloxypropyl)oxy)-2-hydroxyphenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine, mixtures of polyoxy-1,2-ethanediyl and α -(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropyl)-w-hydroxy, α -(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropyl)-w-(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropoxy), 2(2-hydroxy-5-methyl phenyl) benzotriazole, ethyl-2-cyano 3,3-diphenyl acrylate, and phenyl salicylate.

34. The method of claim 1, wherein the lens forming composition further comprises a hindered phenolic compound selected from the group consisting of thiodiethylene bis-(3,5-di-*tert*-butyl-4-hydroxy)hydrocinnamate and octadecyl-3,5-bis(1,1-dimethylethyl)-4-hydroxybenzene-propanoate for inhibiting oxidation of the lens forming composition.

35. The method of claim 1 wherein the light absorbing compound comprises a photochromic compound, and wherein an amount of photochromic compound in the lens forming composition ranges from about 1 ppm to about 5% by weight.

36. The method of claim 1 wherein the light absorbing compound comprises a photochromic compound, and wherein an amount of photochromic compound in the lens forming composition ranges from about 30 ppm to about 2000 ppm.

37. The method of claim 1 wherein the light absorbing compound comprises a photochromic compound, and wherein an amount of photochromic compound in the lens forming composition ranges from about 150 ppm to about 1000 ppm.

38. The method of claim 1 wherein an amount of photoinitiator in the lens forming composition ranges from about 30 ppm to about 2000 ppm.

39. The method of claim 1 wherein an amount of the co-initiator in the lens forming composition ranges from about 1 ppm to about 7% by weight.

40. The method of claim 1 wherein an amount of the co-initiator in the lens forming composition ranges from about 0.3% to about 2% by weight.

41. The method of claim 1 wherein the lens forming composition comprises less than about 0.15% water.

42. The method of claim 1 wherein the lens forming composition comprises less than about 100 ppm residual acrylic acid.

43. The method of claim 1 wherein the monomer is a polyethylenic-functional monomer containing ethylenically unsaturated groups selected from acrylyl and methacrylyl.

44. The method of claim 1 wherein the monomer is an aromatic containing bis(allyl carbonate)-functional monomer.

45. The method of claim 1 wherein the monomer comprises a compound selected from the group consisting of polyol (allyl carbonate)-functional monomer, acrylic-functional monomer, methacrylic-functional monomer, and mixtures thereof.

46. The method of claim 1 wherein the monomer comprises a compound selected from the group consisting of tripropyleneglycol diacrylate, tetraethyleneglycol diacrylate, trimethylolpropane triacrylate, trimethylolpropane triacrylate, bisphenol A bis allyl carbonate, hexanediol dimethacrylate, and mixtures thereof.

47. The method of claim 1 wherein the co-initiator comprises an amine.

48. The method of claim 1 wherein the lens forming composition comprises an acrylic amine.

49. The method of claim 1 wherein the lens forming composition comprises an diacrylic amine.

50. The method of claim 1 wherein the co-initiator comprises n-methyl diethanol amine.

51. The method of claim 1 wherein the co-initiator comprises a compound selected from the group consisting of N,N-dimethyldiethanolamine, triethanolamine, ethyl-4-dimethylamino benzoate, ethyl-2-dimethylamino benzoate, n-butoxyethyl-4-dimethyl amino benzoate, *p*-dimethyl amino benzaldehyde, N,N-dimethyl-*p*-toluidine, and octyl *p*-dimethylaminobenzoate.

52. The method of claim 1 wherein the photoinitiator comprises a compound selected from the group consisting of 1-hydroxycyclohexylphenyl ketone, mixtures of bis(2,6-

dimethoxybenzoyl) (2,4,4,-trimethylphenyl) phosphine oxide and 2-hydroxy-2-methyl-1-phenylpropan-1-one, mixtures of (2,6 dimethoxybenzoyl) (2,4,4,-trimethylphenyl) phosphine oxide and 1-hydroxycyclohexylphenylketone, 2,2-dimethoxy-2-phenylacetophenone, 2-hydroxy-2-methyl-1-phenylpropan-1-one, mixtures of 2,4,6-trimethylbenzoyldiphenylphosphine oxide and 2-hydroxy-2-methyl-1-phenylpropan-1-one, 2,2-diethoxyacetophenone, benzil dimethylketal, α -hydroxyketone, 2-methyl thioxanthone, 2-chlorothioxanthone, thioxanthone, xanthone, 2-isopropylthioxanthone, mixtures of triaryl sulfonium hexafluoroantimonate and propylene carbonate, diaryl diodonium hexafluoroantimonate, mixtures of benzophenone and 1-hydroxycyclohexylphenyl ketone, 2-benzyl-2-N,N-dimethylamino-1-(4-morpholinophenyl)-1-butanone, 2-methyl-1-[4-(methylthio)phenyl]-2-morpholino propan-1-one, bis(η 5-2,4-cyclopentadien-1-yl)-bis-[2,6-difluoro-3-(1H-pyrrol-1-yl) phenyl]titanium, mixtures of 2,4,6-trimethylbenzophenone and 4-methylbenzophenone, benzoyl peroxide, and methyl benzoylformate.

53. The method of claim 1 wherein the photoinitiator comprises bis(2,6-dimethoxybenzoyl)-(2,4,4 trimethylphenyl) phosphine oxide.

54. The method of claim 1 wherein the photoinitiator forms a polymer chain radical in response to being exposed to activating light.

55. The method of claim 1 wherein the photoinitiator forms a first polymer chain radical in response to being exposed to activating light, and wherein the first polymer chain radical reacts with the co-initiator, thereby forming a second polymer chain radical.

56. The method of claim 1 wherein the photoinitiator forms a first polymer chain radical in response to being exposed to activating light, and wherein the first polymer chain radical reacts with the co-initiator, thereby forming a second polymer chain radical, and wherein the second polymer chain radical reacts with the monomer, thereby curing the monomer.

57. The method of claim 1 wherein the lens forming composition comprises bis(1,2,2,6,6-pentamethyl-4-piperidiny)sebacate for inhibiting degradation of the cured monomer caused by exposure to activating light.

58. The method of claim 1 wherein the lens forming composition comprises a dye to form a background color within the eyeglass lens.

59. The method of claim 1 wherein the lens forming composition further comprises a dye that inhibits ambient oxygen from reacting with the ultraviolet absorbing compound.

60. The method of claim 1 wherein the lens forming composition further comprises a dye for altering a background color of the lens during use.

61. The method of claim 1 wherein the lens forming composition further comprises a dye for inhibiting the light absorbing compound from being exposed to predetermined wavelengths of light.

62. A lens made by the method of claim 1.

63. The method of claim 1 wherein an amount of activating light is directed towards the mold cavity, and wherein the mold cavity comprises a temperature, and wherein the amount of activating light directed to the mold cavity is a function of the temperature of at least a portion of the mold cavity.

64. The method of claim 1 wherein directing light to the lens forming composition comprises applying a number of activating light pulses to the lens forming composition, wherein the number

of light pulses is a function of a change in a temperature of the lens forming composition over a period of time.

65. The method of claim 1 wherein directing light to the lens forming composition comprises
5 applying a plurality of activating light pulses to the lens forming composition, wherein a duration of the light pulses is a function of a change in a temperature of the lens forming composition over a period of time.

66. The method of claim 1 wherein directing light to the lens forming composition comprises
10 applying a plurality of activating light pulses to the lens forming composition, wherein an intensity of the light pulses is a function of a change in a temperature of the lens forming composition over a predetermined period of time.

67. A method for making a plastic eyeglass lens that contains a light absorbing compound by
15 exposing a liquid lens forming composition to activating light, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

20 a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a light absorbing compound that substantially absorbs light having a wavelength in a first range during use;

25 a photoinitiator that initiates curing of the monomer in response to being exposed to activating light having a wavelength in a second range during use; and

directing activating light at a wavelength in the second range toward at least one of the mold members to cure the lens forming composition and to form the eyeglass lens.

68. The method of claim 67 wherein the first range is less than 380 nanometers.

69. The method of claim 67 wherein the second range is from about 380 to about 490 nanometers.

70. The method of claim 67 wherein the light absorbing compound is a photochromic compound and the method forms a plastic photochromic eyeglass lens.

71. The method of claim 67 wherein the light absorbing compound is an ultraviolet light absorbing compound, and the method forms a plastic eyeglass lens that will absorb at least a portion of a spectrum of ultraviolet light during use.

72. A method for making a plastic eyeglass lens that contains a photochromic compound by exposing a liquid lens forming composition to activating light, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photochromic compound that absorbs light having a wavelength of below about 380 nanometers during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light having a wavelength of between about 380 and 490 nanometers during use; and

5 directing activating light at a wavelength of between about 380 and 490 nanometers toward at least one of the mold members to cure the lens forming composition and to form a photochromic eyeglass lens.

73. The method of claim 72, further comprising filtering the activating light.

10 74. The method of claim 72, further comprising filtering the activating light to apply different intensities of light towards at least one mold.

15 75. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

20 a monomer capable of being cured to form the eyeglass lens during use;

a light absorbing compound for lowering an intensity of light being transmitted through the eyeglass lens when the light absorbing compound is exposed to activating light having a wavelength in a first range;

25 a photoinitiator that initiates curing of the monomer in response to being exposed to activating light having a wavelength in a second range during use; and

directing activating light at a wavelength in the second range toward at least one of the mold members to cure the lens forming composition and to form the eyeglass lens.

76. The method of claim 75 wherein the first range is less than 380 nanometers.

77. The method of claim 75 wherein the second range is from about 380 to about 490 nanometers.

78. The method of claim 75 wherein the first range is less than 380 nanometers, and wherein the second range is from about 380 to about 490 nanometers.

79. The method of claim 75 wherein the light absorbing compound is a photochromic compound and the method forms a plastic photochromic eyeglass lens.

80. The method of claim 75 further comprising filtering the light such that a minimal dose of activating light in the first range contacts the lens forming composition while activating light is being applied to the lens forming composition.

81. The method of claim 75 wherein the first range is substantially different from the second range.

82. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising a photoinitiator and a monomer that cures to form an eyeglass lens when exposed to activating light;

directing activating light toward the mold cavity, the activating light causing the lens forming composition to cure during use;

monitoring a temperature of the lens forming composition while it is curing; and

5 varying the temperature of the lens forming composition while it is curing to vary a power of the lens that is formed from the lens forming composition.

83. The method of claim 82, further comprising reducing the power of the formed lens by
10 increasing the temperature of the lens forming composition.

84. The method of claim 82, further comprising increasing the power of the formed lens by decreasing the temperature of the lens forming composition.

15 85. The method of claim 82 wherein the lens forming composition reaches a peak temperature during cure, and further comprising varying the power of the formed lens by varying the peak temperature.

20 86. The method of claim 82 wherein the lens forming composition reaches a peak temperature during cure, and further comprising increasing the power of the formed lens by decreasing the peak temperature.

25 87. The method of claim 82 wherein the lens forming composition reaches a peak temperature during cure, and further comprising decreasing the power of the formed lens by increasing the peak temperature.

88. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising a photoinitiator and a monomer that cures to form an eyeglass lens when exposed to activating light;

5 directing activating light toward the mold cavity, the activating light causing the lens forming composition to cure during use;

monitoring a time period that the lens forming composition is curing in the mold cavity;
and

10 varying the time period that the lens forming composition is curing in the mold cavity to vary a power of the lens that is formed from the lens forming composition.

89. The method of claim 88, further comprising increasing the time period to decrease the
15 power of the lens.

90. The method of claim 88, further comprising decreasing the time period to increase the power of the lens.

20 91. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

25 a monomer capable of being cured for forming the eyeglass lens; and

a photoinitiator adapted to adapted to undergo a chemical change in response to being exposed to initiating light;

directing light toward at least one of the mold members to cure the lens forming composition to form the eyeglass lens;

5 removing the formed eyeglass lens from the mold cavity, wherein the lens is removed at a demolding time period; and

adjusting the demolding time period, the demolding time period being the time period after which the lens forming composition was first exposed to the light such that a power of the
10 eyeglass lens is substantially different from a target power, wherein the target power is determined by a shape of the mold cavity.

92. The method of claim 91, further comprising increasing the demolding time period to decrease the power of the lens.

15 93. The method of claim 91, further comprising decreasing the demolding time period to increase the power of the lens.

94. A method for making a plastic eyeglass lens, comprising:

20 placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising a photoinitiator and a monomer that cures to form an eyeglass lens when exposed to activating light;

25 directing activating light toward the mold cavity, the activating light causing the lens forming composition to cure during use;

automatically monitoring a temperature of the lens forming composition while it is curing;

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automatically varying the temperature of the lens forming composition while it is curing to vary a power of the lens that is formed from the lens forming composition; and

5 automatically varying the time period that the lens forming composition is curing to vary a power of the lens that is formed from the lens forming composition.

95. A system for making an ophthalmic eyeglass lens, comprising:

10 a first mold member having a casting face and a non-casting face;

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15 a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

20 a lens forming composition adapted to be disposed within the mold cavity during use, comprising:

25 a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a light absorbing compound that substantially absorbs light having a wavelength in a first range during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light having a wavelength in a second range during use; and

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a first light generator adapted to generate and direct activating light at a wavelength in the second range toward at least one of the mold members to cure the lens forming composition and to form the eyeglass lens during use.

5 96. The system of claim 95, further comprising a controller to control the first light generator during use such that activating light is directed in a plurality of pulses toward at least one of the first and second mold members.

10 97. The system of claim 95 wherein the first light generator is adapted to direct activating light toward the first mold member, and further comprising a second light generator adapted to generate and direct a pulse of activating light toward the second mold member.

15 98. The system of claim 95 wherein the first light generator is adapted to direct activating light toward the first mold member, and further comprising a second light generator adapted to generate and direct a pulse of activating light toward the second mold member, and further comprising a controller adapted to control the first and second light generators such that activating light is directed in a plurality of pulses toward the first and second mold members.

20 99. The system of claim 95 wherein the first light generator is adapted to generate and direct activating light pulses with a sufficiently high intensity such that the photoinitiator forms a first polymer chain radical.

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~~100. The system of claim 95 wherein the first light generator is adapted to generate and direct activating light pulses with a sufficiently high intensity such that the photoinitiator forms a first polymer chain radical that reacts with the co-initiator and the co-initiator forms a second polymer chain radical that reacts with the monomer.~~

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101. The system of claim 95, further comprising a hazy filter disposed directly adjacent to at least one of the mold members, the filter being adapted to manipulate intensity of activating directed light toward the lens forming composition during use.

5 102. The system of claim 95, further comprising a hazy filter disposed directly adjacent to at least one of the mold members, the filter comprising a varying thickness such that the filter varies an intensity distribution of activating light directed across the mold members during use.

10 103. The system of claim 95, further comprising a cooler adapted to cool the mold cavity during use.

104. The system of claim 95, further comprising a distributor adapted to apply air to the mold cavity to remove heat from the mold cavity during use.

15 105. The system of claim 95 wherein the first light generator comprises a fluorescent light source.

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20 106. The system of claim 95 wherein the first light generator comprises a fluorescent light source adapted to emit light at a wavelength of about 385 nanometers to 490 nanometers.

107. A system for making an ophthalmic eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

25 a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a lens forming composition adapted to be disposed within the mold cavity during use,
comprising:

5 a monomer that cures by exposure to activating light to form the eyeglass lens
during use;

a photoinitiator that initiates curing of the monomer in response to being exposed
to activating light during use;

10 a first light generator adapted to generate and direct activating light toward at least one of
the mold members to cure the lens forming composition and to form the eyeglass lens during use;

15 a temperature sensor adapted to measure changes in the temperature of the lens forming
composition during use; and

a controller coupled to the temperature sensor and the first light controller, wherein the
controller adjusts a dose of initiating light reaching the cavity as a function of a change in the
temperature of the lens forming composition over a period of time during use.

20 108. The system of claim 107 wherein the light is ultraviolet light.

109. The system of claim 107 wherein the controller is adapted to adjust the dose of light
reaching the cavity as a function of an initial temperature of the mold cavity or as a function of
25 ambient room temperature.

110. The system of claim 107 wherein the controller is adapted to vary an intensity of the light in response to the difference in the temperature of the lens forming composition over the period of time.

5 111. The system of claim 107 wherein the controller is adapted to vary a duration of the light in response to the difference in the temperature of the lens forming composition over the predetermined period of time.

10 112. The system of claim 107 wherein the controller is adapted to vary an intensity of the light in response to the difference in the temperature of the lens forming composition over the predetermined period of time, and wherein the controller is adapted to vary a duration of the light pulses in response to the difference in the temperature of the lens forming composition over the predetermined period of time.

15 113. The system of claim 107 wherein the controller is adapted to determine when substantially all of the lens forming composition has cured.

20 114. The system of claim 107 wherein the controller is adapted to stop the application of light to the lens forming composition after substantially all of the lens forming composition has been cured.

115. The system of 107 wherein the controller is a Proportional-Integral-Derivative controller.

25 116. The system of 107, further comprising a light sensor adapted to measure the dose of light transmitted to the mold cavity.

117. The system of 107, further comprising a light sensor adapted to measure the dose of light transmitted to the mold cavity, and wherein the light sensor is adapted to communicate with the

controller, wherein the controller varies the intensity or duration of light such that a predetermined dose is transmitted to the mold cavity.

118. The system of claim 107, wherein the controller is adapted to control the first light generator such that light is directed in a plurality of pulses toward at least one of the first and second mold members.

119. The system of claim 107 wherein the first light generator is adapted to direct light toward the first mold member, and further comprising a second light generator adapted to generate and direct light toward the second mold member.

120. The system of claim 107 wherein the first light generator is adapted to direct light toward the first mold member, and further comprising a second light generator adapted to generate and direct light toward the second mold member, and wherein the controller is adapted to control the first and second light generators such that light is directed in a plurality of pulses toward the first and second mold members.

121. The system of claim 107 wherein the first light generator is adapted to generate and direct light pulses with a sufficiently high intensity such that the photoinitiator forms a first polymer chain radical.

122. The system of claim 107 wherein the first light generator is adapted to generate and direct light pulses with a sufficiently high intensity such that the photoinitiator forms a first polymer chain radical that reacts with the co-initiator and the co-initiator forms a second polymer chain radical that reacts with the monomer to cure the monomer.

123. The system of claim 107, further comprising a hazy filter disposed directly adjacent to at least one of the mold members, the filter being adapted to manipulate intensity of directed light toward the lens forming composition.

5 124. The system of claim 107, further comprising a hazy filter disposed directly adjacent to at least one of the mold members, the filter comprising a varying thickness such that the filter varies an intensity distribution of light directed across the mold members.

125. The system of claim 107, further comprising a cooler adapted to cool the mold cavity.

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126. The system of claim 107, further comprising a distributor adapted to apply air to the mold cavity to remove heat from the mold cavity.

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127. The system of claim 107 wherein the first light generator comprises a fluorescent light source.

128. The system of claim 107 wherein the first light generator comprises a fluorescent light source adapted to emit light at a wavelength of about 380 nanometers to 490 nanometers.

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129. The system of claim 107 wherein the first light generator comprises a xenon light source.

130. The system of claim 107 wherein the first light generator comprises a photostrobe having a quartz tube.

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131. The system of claim 107 wherein the temperature sensor is a infrared temperature sensor.

132. A system for making an ophthalmic eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a lens forming composition adapted to be disposed within the mold cavity during use, comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a first light generator adapted to generate and direct activating light toward at least one of the mold members to cure the lens forming composition and to form the eyeglass lens during use;

a temperature sensor adapted to measure changes in the temperature of the lens forming composition during use; and

a controller coupled to the temperature sensor and the first light generator, wherein the controller adjusts a dose of initiating light reaching the cavity during a second light pulse, the second light pulse applied subsequent to a first light pulse, and wherein the controller determines the dose of light to be applied to the lens forming composition from the second light pulse as a function of a change in the temperature of the lens forming composition over a period of time subsequent to the application of a first light pulse.

133. A system for making a plastic eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a light filter adapted to be positioned substantially adjacent to at least one of the mold members during use;

a first light generator adapted to generate and direct light toward at least one of the mold members during use; and

a controller coupled to the temperature sensor, wherein the controller adjusts a dose of initiating light reaching the cavity as a function of a change in the temperature of the lens forming composition over a period of time during use.

134. The system of claim 133 wherein the filter comprises:

a polymerized monomer substantially distributed throughout the filter;

a photoinitiator substantially distributed throughout the filter for initiating polymerization of the monomer in response to being exposed to ultraviolet light; and

a compound substantially distributed throughout the filter for making the filter hazy.

135. The system of claim 133 wherein the filter comprises a bisphenol compound to make the filter hazy.

5 136. The system of claim 133 wherein the filter comprises a styrene-butadiene copolymer to make the filter hazy.

137. The system of claim 133 wherein the filter is substantially translucent to light.

10 138. The system of claim 133 wherein the filter is substantially hazy such that the filter disperses the light into a plurality of light rays during use.

139. The system of claim 133 wherein the filter comprises a varying thickness such that the filter varies an intensity distribution of light directed across the mold members during use.

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140. The system of claim 133 wherein the filter comprises a varying thickness adapted to vary an intensity distribution of light directed across the mold members such that a greater amount of light passing through a thick portion of the filter is attenuated than passing through a thin portion of the filter.

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